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L10: Entry 1 of 1 File: DWPI Mar 30, 1988

DERWENT-ACC-NO: 1988-086200
DERWENT-WEEK: 199910
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TITLE: Macro:monomer compsns. - useful in prodn.of graft polymers for coating and moulding resins

INVENTOR: JANOWICZ, A H

PATENT-ASSIGNEE: DU PONT DE NEMOURS & CO E I (DUPO)

PRIORITY-DATA: 1986US-0910589 (September 23, 1986)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 261942 A	March 30, 1988	E	013	
AU 8778856 A	March 31, 1988		000	
NO 8703954 A	April 18, 1988		000	
JP 63095215 A	April 26, 1988		000	
DK 8704958 A	March 24, 1988		000	
EP 261942 B	July 31, 1991		000	
DE 3771819 G	September 5, 1991		000	
ES 2024516 B	March 1, 1992		000	
CA 1313922 C	February 23, 1993		000	C08F002/38
KR 9602979 B1	March 2, 1996		000	C08L023/02

DESIGNATED-STATES: AT BE CH DE ES FR GB IT LI LU NL SE AT BE CH DE ES FR IT LI LU NL SE

CITED-DOCUMENTS:1.Jnl.Ref; A3...8936 ; No-SR.Pub ; US 4526945

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
EP 261942A	September 22, 1987	1987EP-0308395	
JP63095215A	September 21, 1987	1987JP-0235047	
CA 1313922C	September 17, 1987	1987CA-0547212	
KR 9602979B1	September 22, 1987	1987KR-0010498	

INT-CL (IPC): C08F 2/38; C08F 4/80; C08F 20/14; C08F 28/02; C08F 293/00; C08F 299/00; C08L 23/02

RELATED-ACC-NO: 1991-215189

ABSTRACTED-PUB-NO: EP 261942A
BASIC-ABSTRACT:

Compsns. (I) comprises at last 15 mol. % of a macromonomer (II) contg.: i) and end gp. of formula: C(X1)(X2)=C(X3)(CH2)n-, where X1,X2 and X3 = H or a polar or nonpolar substit. that is inert under polymerising conditions; n = 0-1 provided that when n = 0 one is not H and when n = 1, X1 and X2 are both H: ii) 3-10,000 monomeric units (III)

linked to the end gp., selected from cpds. of formula: -(CHR1)(CR2=CR3)mC(R4)(R5))-, where m = 0-1; R1, R2, R3, R4 and R5 = H or a polar or nonpolar substit. that is inert under polymerising conditions, provided that when m = 0, at least one of R4 and R5 is not H; and providing that: a) each (III) has polymerising compatibility with any adjacent (III); b) (I) comprises at least 80 (partic. at least 95) mol. % (II) when n = 1, X1 and X2 = H, X3 = CO2J (where J = 1-10C alkyl), m = O, R1 = H, R4 and R5 = CO2J and CH3, provided that when R4 = CO2J, R5 = CH3 and vice versa; and when n = 1, X1 and X2 = H, X3 = CN, m = O, R1 = H, R4 and R5 = CN and CH3, provided than when R4 = CN, R5 = CH3 and vice versa; and c) (I) comprises at least 50 (partic. at least 95) mol. % (II) when n = 0, X1 and X2 = H or OC(O)J, provided than when X1 = H, X2 = OC(O)J and vice versa, X3 = H, m = O, R1 = H and R4 and R5 = OC(O)J and H, provided than when R4 = OC(O)J, R5 = H and vice versa.

USE - (I) can be used to produce graft polymers which are useful in coating and moulding resins. They can also be used for fibres, films, sheets and composite materials.

ABSTRACTED-PUB-NO: EP 261942B
EQUIVALENT-ABSTRACTS:

A composition comprising at least about 85 mol.% of a macromonomer having: (i) an end group of the formula C(X1)(X2)= C(X3)(CH2)n; and (ii) at least 50 and up to about 10,000 monomeric units linked to said end group, said units being independently selected from a compound of the formula (CHR1(CR2=CR3)mC(R4)(R5)); wherein; n is 0 or 1; X1 and X2 independently are H or a polar or nonpolar substituent that is inert under polymerising conditions, provided that when n is 0, at least one is not H and provided that when n is 1, both are H; X3 is H or a polar or nonpolar substituent that is inert under polymerising conditions, provided that when n is 0, X3 is H; m is 0 or 1; R1, R2 and R3, independently, are H or a polar or nonpolar substituent that is inert under polymerising conditions; R4 and R5, independently, are H or a polar or nonpolar substituent that is inert under polymerising conditions; R4 and R5 independently, are H or a polar or nonpolar substituent that is inert under polymerising conditions provided that where m is 0, at least one is not H; and provided that each monomeric unit has polymerising compatability with any adjacent monomeric unit.

CHOSEN-DRAWING: Dwg.0/0

DERWENT-CLASS: A18
CPI-CODES: A10-C03; A10-E01; A12-B01; A12-S;

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L4: Entry 1 of 1 File: USPT Aug 14, 2001

US-PAT-NO: 6274688
DOCUMENT-IDENTIFIER: US 6274688 B1

TITLE: Functional groups-terminated vinyl polymers

DATE-ISSUED: August 14, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Nakagawa; Yoshiki	Kobe			JP
Kitano; Kenichi	Kobe			JP
Kusakabe; Masato	Kobe			JP

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Kaneka Corporation	Osaka			JP	03

APPL-NO: 09/ 122896 [PALM]
DATE FILED: July 28, 1998

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
JP	9-21889	July 28, 1997
JP	9-218090	July 28, 1997
JP	9-218091	July 28, 1997

INT-CL: [07] C08 F 120/16

US-CL-ISSUED: 526/329.7; 526/328, 526/346
US-CL-CURRENT: 526/329.7; 526/328, 526/346

FIELD-OF-SEARCH: 526/329.7, 526/328, 526/346

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	3786116	January 1974	Milkovich et al.	260/885
☐	4732808	March 1988	Krampe et al.	428/355
☐	5321093	June 1994	Bronstert et al.	525/314
☐	5376745	December 1994	Handlin, Jr. et al.	526/178
☐	5405731	April 1995	Chandrasekaran et al.	430/260
☐	5753768	May 1998	Ellis	525/309
☐	5763548	June 1998	Matyjaszewski et al.	526/135
☐	5789487	August 1998	Matyjaszewski et al.	525/301
☐	5807937	September 1998	Matyjaszewski et al.	526/135

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
WO 96/30421	October 1996	WO	
WO 97/18247	May 1997	WO	

ART-UNIT: 172

PRIMARY-EXAMINER: Moore; Margaret G.

ABSTRACT:

A vinyl polymer which has at least one terminal functional group per molecule and has a ratio of weight average molecular weight to number average molecular weight of less than 1.8 as determined by gel permeation chromatography, said terminal functional group being a crosslinking silyl group, an alkenyl group, or a hydroxyl group. Curable compositions containing this vinyl polymer is easy to handle.

8 Claims, 0 Drawing figures

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L5: Entry 1 of 1 File: USPT Aug 29, 2000

US-PAT-NO: 6111022
DOCUMENT-IDENTIFIER: US 6111022 A

TITLE: Preparation of novel homo- and copolymers using atom transfer radical polymerization

DATE-ISSUED: August 29, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Matyjaszewski; Krzysztof	Pittsburgh	PA		
Coca; Simion	Pittsburgh	PA		
Gaynor; Scott G.	Pittsburgh	PA		
Nakagawa; Yoshiki	Pittsburgh	PA		
Jo; Seong Mu	Pittsburgh	PA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Carnegie-Mellon University	Pittsburgh	PA			02

APPL-NO: 09/ 206980 [PALM]
DATE FILED: December 8, 1998

PARENT-CASE:
This application is a Division of aplicaton Ser. No. 08/940,985 Filed on Sep. 30, 1997, allowed, which is a divisional of application Ser. No. 08/677,828, filed on Jul. 10, 1996, now U.S. Pat. No. 5,789,487.

INT-CL: [07] C08 L 33/18

US-CL-ISSUED: 525/238; 525/88, 525/249, 525/256, 525/259, 525/275, 525/319, 525/321, 525/89, 525/95, 525/168, 526/90, 526/108, 526/113, 526/182, 526/135, 526/147, 524/714, 524/792, 524/796
US-CL-CURRENT: 525/238; 524/714, 524/792, 524/796, 525/168, 525/249, 525/256, 525/259, 525/275, 525/319, 525/321, 525/88 , 525/89, 525/95, 526/108, 526/113, 526/135, 526/147, 526/182, 526/90

FIELD-OF-SEARCH: 525/245, 525/256, 525/259, 525/275, 525/319, 525/321, 525/238, 525/88, 525/89, 525/95, 525/168, 526/90, 526/108, 526/113, 526/182, 526/135, 526/147, 524/714, 524/792, 524/796

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	3862978	January 1975	Decker et al.	
☐	4145486	March 1979	Haag et al.	
☐	5169914	December 1992	Kaszas et al.	
☐	5405913	April 1995	Harwood et al.	
☐	5451647	September 1995	Faust et al.	
☐	5708102	January 1998	Fryd et al.	
☐	5763548	June 1998	Matyjaszewski et al.	526/135
☐	5767210	June 1998	Lecomte et al.	
☐	5773538	June 1998	Feiring	
☐	5789487	August 1998	Matyjaszewski et al.	525/301
☐	5807937	September 1998	Matyjaszewski et al.	526/135
☐	5811500	September 1998	Dubois et al.	
☐	5854364	December 1998	Senninger et al.	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
1165828A	November 1997	CN	
0 265 091 A1	April 1988	EP	
0 789 036 A2	August 1997	EP	
0 816 385 A1	January 1998	EP	
0 824 110 A1	February 1998	EP	
0 824 111 A1	February 1998	EP	
0 826 698 A1	March 1998	EP	
0 832 902 A2	April 1998	EP	
WO 97/47661	December 1997	WO	
WO 98/06758	February 1998	WO	
WO 98/20050	May 1998	WO	

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Polymer Letters, vol. 5, pp. 697-701, 1967, New Initiator Systems for Radical Polymerization of Vinyl Monomers, Takayuki Otsu et al.
Science, vol. 272, pp. 866-868, May 10, 1996, Polymers With Very Low Polydispersities From Atom Transfer Radical Polymerization, Timothy E. Patten et al.
Macromolecules, vol. 31, No. 12, 1998, pp. 4053-4056, Self-Regulated Phase Transfer of Cu.sub.2 O/bpy, Cu(O)/bpy, and Cu.sub.2 O/Cu(O)/bpy Catalyzed "Living" Radical Polymerization Initiated With Sulfonyl Chlorides, V. Percec et al.
J. Chem. Soc. (B), pp. 255-259, Redox-Transfer, Part VI, Determination of Hammet's .rho.-Constant for the Oxidation of Cuprous Chloride by Aromatic Sulphonyl Chlorides, A. Orochov et al.
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J. Chem. Soc. Perkin Trans, 1991, pp. 627-633, Novel Perfluoroalkylation of Alkenes With Perfluoroalkanesulphonyl Chlorides Catalysed by a Ruthenium (II) Complex, Nobumasa Kamigata et al.
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Macromolecules, vol. 29, No. 10, 1996, pp. 3665-3668, Metal-Catalyzed "Living" Radical Polymerization of Styrene Initiated With Arenesulfonyl Chlorides. From Heterogeneous to

Homogeneous Catalysis, Virgil Percec et al.
Chemical Abstracts, vol. 85, 1976, pp. 20.
Science, vol. 25, Feb. 22, 1991, pp. 887-893, Living Polymerization Methods, Owen W. Webster.
Journal of Polymer Science: Part A: Polymer Chemistry, vol. 36, 1417-1424, 1998, Polymerization of Acrylates by Atom Transfer Radical Polymerization. Homopolymerization of 2-Hydroxyethyl Acrylate, Simion Coca et al.
Macromolecules, vol. 29, No. 27, 1996, 8576-8582, Controlled Radical Polymerization of Methacrylic Monomers in the Presence of Bis(Ortho-Chelated) Arylnickel(II) Complex and Different Activated Alkyl Halides, C. Granel, et al.
Macromolecules, vol. 30, No. 23, 1997, 7348-7350, Zerovalent Metals in Controlled/"Living" Radical Polymerization, Krzysztof Matyjaszewski et al.
Macromolecules, vol. 31, No. 12, 1998, 4041-4044, Nitroxide Mediated Living Radical Polymerization of Styrene in Emulsion, Catherine Marestin et al.
Macromolecules, vol. 30, No. 25, 1997, 7692-7696, Controlled/"Living" Radical Polymerization. Homogeneous Reverse Atom Transfer Radical Polymerization Using Aibn as the Initiator, Jianhui Xia et al.
Macromolecules, vol. 30, No. 2, 1997, 324-326, Controlled Radical Polymerization in Emulsion, Stefan A.F. Bon et al.
Macromolecules, vol. 30, No. 8, 1997, 2244-2248, Evidence for Living Radical Polymerization of Methyl Methacrylate With Ruthenium Complex: Effects of Protic and Radical Compounds and Reinitiation From the Recovered Polymers, Tomotaka Nishikawa et al.
Controlled Atom Transfer Radical Polymerizations of Methyl Methacrylate Under Micellar Conditions, Takayuki Makino et al., pp. 288-289.
Part 2, Controlled "Living" Emulsion Polymerization of Methyl Methacrylate by Atom Transfer Radical Polymerization, pp. 90-134.
Takayuki Otsu et al., "Synthesis, Reactivity, and Role of -Vinylbenzyl N,N-Diethyldithiocarbamate as a Monomer-Iniferter in Radical Polymerization", Macromolecules, vol. 19, No. 2, pp. 287-290, 1986.
Kato et al., "Polymerization of Methyl Methacrylate with the Carbon Tetrachloride/Dichlorotris(triphenylphospine)ruthenium(II)Methylaluminum . . . ", Macromolecules 1995, 28, 1721-1723.
Patten et al., "Polymers with Very Low Polydispersities from Atom Transfer Radical Polymerization", Science, vol. 272, pp. 866-868.
J.S. Wang et al., "Controlled Sequential and Random Radical Copolymerization of Styrene and Butyl Acrylate":, Polym. Prepr. (ACS) 36(1), 1995, 465.

ART-UNIT: 171

PRIMARY-EXAMINER: Acquah; Samuel A.

ABSTRACT:

The present invention is directed to a process of atom (or group) transfer radical polymerization for the synthesis of novel homopolymer or a block or graft copolymer, optionally containing at least one polar group, with well defined molecular architecture and narrow polydispersity index, in the presence of an initiating system comprising (i) an initiator having a radically transferrable atom or group, (ii) a transition metal compound, and (iii) a ligand; the present invention is also directed to the synthesis of a macromolecule having at least two halogen groups which can be used as a macroinitiator component (i) to subsequently form a block or graft copolymer by an atom or group transfer radical polymerization process; the present invention is also directed to a process of atom or group transfer radical polymerization for the synthesis of a branched or hyperbranched polymer; in addition, the present invention is directed to a process of atom or group transfer radical polymerization for the synthesis of a macroinitiator which can subsequently be used to produce a block or graft copolymer.

40 Claims, 19 Drawing figures

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L10: Entry 1 of 1 File: USPT

DOCUMENT-IDENTIFIER: US 5789487 A
TITLE: Preparation of novel homo- and copolymers using atom transfer radical polymerization

US PATENT NO. (1):
5789487

Brief Summary Text (36):
wherein each X is a halogen atom and n is an integer of 1 to 100; this macromonomer is then used in the presence of a vinyl monomer, a transition metal compound, and a ligand to form a block or graft copolymer, exhibiting a well defined molecular architecture.

Drawing Description Text (13):
FIG. 12 shows GPC traces of a difunctional polysiloxane macromonomer and the resulting copolymer with styrene.

Drawing Description Text (14):
FIG. 13 shows the M.sub.n and polydispersity dependence on conversion for ATRP of styrene with difunctional polysiloxane macromonomer.

Detailed Description Text (7):
In the context of the present application, the term "macromolecule" refers to a molecule containing a large number of monomeric units and having a number average molecular weight (M.sub.n) of at least 500. Further, the term "macroinitiator" refers to a macromolecule having at least one initiating site. The term "macromonomer" refers to a macromolecule having at least one polymerizable site. In addition, the term "living" initiating moiety (anionic, cationic or radical) refers to an initiating moiety that substantially does not undergo termination reaction and thus, polymerization continues until substantially all the monomer is exhausted.

Detailed Description Text (59):
A further object of the present invention is to synthesize a block copolymer by combining a "living" carbocationic polymerization with a "living" radical polymerization. "Living" cationic polymerizations have been described by Matyjaszewski (Cationic Polymerizations, Mechanism, Synthesis and Applications; Marcel Dekker, Inc., New York, 1996). Thus, a macromonomer can be synthesized by a "living" carbocationic method, having a terminal group, such as a halogen group, which subsequently can be used as an effective macroinitiator in a "living" atom or group transfer radical polymerization. Scheme 3(a) exemplifies the procedure (not limited to the particular examples) for the synthesis of poly(styrene-b-styrene), poly(styrene-b-methylacrylate) and poly(styrene-b-methylmethacrylate) copolymers. In addition, as exemplified in Scheme 3(b), a variety of ABA block copolymers with polyisobutene (PIB) mid block can be prepared. ##STR3##

Detailed Description Text (66):
is reacted with a macromonomer that is functionalized with a group C. The functional group C must be able to react with Y.sub.1 to form a stable bond and thus the functional group X.sub.3 is now added to the macromonomer. The addition of the group X.sub.3 to the macromonomer transforms the monomer into a macroinitiator for ATRP. This macroinitiator is used as component (i) of the initiating system to polymerize a vinyl monomer in the presence a transition metal compound (component (ii)), and a ligand (component (iii)) to form a block copolymer. In formula (IV), X.sub.3 is a halogen (preferentially chlorine or bromine), n is an integer of 1 to 100, preferentially of 1 to 10, Y.sub.1 is any functional group such as (but not limited to) hydroxyl, carboxyl,

amine, --SiH or --C(.dbd.O)--X, where X is a halogen. R.sub.3 is selected from the group consisting of alkyl, aryl and aralkyl group, as defined above, and R.sub.3 ' is a C.sub.1 -C.sub.20 -alkyl group.

Detailed Description Text (83):
The homolytic cleavage of group A can occur at the stage of monomer, polymer or both. Group A becomes group A' when it is pendent or A" when it is at the chain end of a macromonomer. Thus, the following possibilities can occur depending on the relative reactivities of A, A' and A":

Detailed Description Text (99):
Examples include (but are not limited to) ATRP of p-chlorosulfonylstyrene, vinyl chloroacetate, with styrene, etc., which result in macromonomers with vinyl acetate(VAc), branched structures possibly with p-chlorosulfonylstyrene.

Detailed Description Text (108):
Examples include (but are not limited to) ATRP of vinyl chloroacetate with styrene, etc. This results in the formation of a macromonomer of polystyrene with a vinyl acetate end group. Another possibility is a free radical copolymerization of VClAc with VAc and then grafting from the backbone.

Detailed Description Text (125):
Initiation, that is the activation of a halide functional group and addition of a monomer, is fast. Fast initiation results in the formation of polymer chain (propagation) with vinyl end groups which can be incorporated into other polymer chains (branching). The rate of chain incorporation depends upon the r.sub.1 and r.sub.2 values for the respective monomer and the polymerizable chain-end functionality on the macromonomer (B.sub.2); (reactivity ratios, "r" are defined in: Polymer Handbook, third edition, J. Brandrup and E. H. Immergut, Editors, Chapter II/153). If r, is about equal to r.sub.2, then the B.sub.2 chain-end is incorporated into other chains throughout the reaction. If addition of the B.sub.2 end-group by the propagating radical is not favored, then the chains are not incorporated into one another until late in the polymerization or even not at all.

Detailed Description Text (212):
Preparation of Macromonomer from Hydrosilyl Terminated Poly(dimethylsiloxane)

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L10: Entry 1 of 1 File: USPT

DOCUMENT-IDENTIFIER: US 5789487 A
TITLE: Preparation of novel homo- and copolymers using atom transfer radical polymerization

US PATENT NO. (1):
5789487

Brief Summary Text (36):
wherein each X is a halogen atom and n is an integer of 1 to 100; this macromonomer is then used in the presence of a vinyl monomer, a transition metal compound, and a ligand to form a block or graft copolymer, exhibiting a well defined molecular architecture.

Drawing Description Text (13):
FIG. 12 shows GPC traces of a difunctional polysiloxane macromonomer and the resulting copolymer with styrene.

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FIG. 13 shows the M.sub.n and polydispersity dependence on conversion for ATRP of styrene with difunctional polysiloxane macromonomer.

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Detailed Description Text (59):
A further object of the present invention is to synthesize a block copolymer by combining a "living" carbocationic polymerization with a "living" radical polymerization. "Living" cationic polymerizations have been described by Matyjaszewski (Cationic Polymerizations, Mechanism, Synthesis and Applications; Marcel Dekker, Inc., New York, 1996). Thus, a macromonomer can be synthesized by a "living" carbocationic method, having a terminal group, such as a halogen group, which subsequently can be used as an effective macroinitiator in a "living" atom or group transfer radical polymerization. Scheme 3(a) exemplifies the procedure (not limited to the particular examples) for the synthesis of poly(styrene-b-styrene), poly(styrene-b-methylacrylate) and poly(styrene-b-methylmethacrylate) copolymers. In addition, as exemplified in Scheme 3(b), a variety of ABA block copolymers with polyisobutene (PIB) mid block can be prepared. ##STR3##

Detailed Description Text (66):
is reacted with a macromonomer that is functionalized with a group C. The functional group C must be able to react with Y.sub.1 to form a stable bond and thus the functional group X.sub.3 is now added to the macromonomer. The addition of the group X.sub.3 to the macromonomer transforms the monomer into a macroinitiator for ATRP. This macroinitiator is used as component (i) of the initiating system to polymerize a vinyl monomer in the presence a transition metal compound (component (ii)), and a ligand (component (iii)) to form a block copolymer. In formula (IV), X.sub.3 is a halogen (preferentially chlorine or bromine), n is an integer of 1 to 100, preferentially of 1 to 10, Y.sub.1 is any functional group such as (but not limited to) hydroxyl, carboxyl,

amine, --SiH or --C(.dbd.O)--X, where X is a halogen. R.sub.3 is selected from the group consisting of alkyl, aryl and aralkyl group, as defined above, and R.sub.3 ' is a C.sub.1 -C.sub.20 -alkyl group.

Detailed Description Text (83):
The homolytic cleavage of group A can occur at the stage of monomer, polymer or both. Group A becomes group A' when it is pendent or A" when it is at the chain end of a macromonomer. Thus, the following possibilities can occur depending on the relative reactivities of A, A' and A":

Detailed Description Text (99):
Examples include (but are not limited to) ATRP of p-chlorosulfonylstyrene, vinyl chloroacetate, with styrene, etc., which result in macromonomers with vinyl acetate(VAc), branched structures possibly with p-chlorosulfonylstyrene.

Detailed Description Text (108):
Examples include (but are not limited to) ATRP of vinyl chloroacetate with styrene, etc. This results in the formation of a macromonomer of polystyrene with a vinyl acetate end group. Another possibility is a free radical copolymerization of VClAc with VAc and then grafting from the backbone.

Detailed Description Text (125):
Initiation, that is the activation of a halide functional group and addition of a monomer, is fast. Fast initiation results in the formation of polymer chain (propagation) with vinyl end groups which can be incorporated into other polymer chains (branching). The rate of chain incorporation depends upon the r.sub.1 and r.sub.2 values for the respective monomer and the polymerizable chain-end functionality on the macromonomer (B.sub.2); (reactivity ratios, "r" are defined in: Polymer Handbook, third edition, J. Brandrup and E. H. Immergut, Editors, Chapter II/153). If r, is about equal to r.sub.2, then the B.sub.2 chain-end is incorporated into other chains throughout the reaction. If addition of the B.sub.2 end-group by the propagating radical is not favored, then the chains are not incorporated into one another until late in the polymerization or even not at all.

Detailed Description Text (212):
Preparation of Macromonomer from Hydrosilyl Terminated Poly(dimethylsiloxane)